Claims

1. A system comprising:

a first fuel cell capable of providing an electrical output;

a second fuel cell capable of providing an electrical output; and

a switch circuit that includes one or more switches for arranging the electrical output of the first fuel cell and the electrical output of the second fuel cell in parallel or series to thereby adjust electrical output efficiency and heat production.

2. The system of claim 1, wherein the system includes a temperature measurement circuit capable of measuring the temperature of the first fuel cell or the second fuel cell and providing a signal to the switch circuit.

3. The system of claim 1, wherein the first fuel cell and the second fuel cell comprises solid oxide fuel cells.

4. The system of claim 1, further comprising a controller to control the switch circuit.

5. The system of claim 4, wherein the controller is configured to receive a signal from a temperature measurement circuit and to arrange the electrical output of the first fuel cell and the electrical output of the second fuel cell in response thereto.

6. The system of claim 4, wherein the controller causes the switch circuit to arrange the electrical output of the first fuel cell and the electrical output of the second fuel cell in parallel to increase electrical output efficiency of the first fuel cell and the second fuel cell.

7. The system of claim 4, wherein the controller causes the switch circuit to arrange the electrical output of the first fuel cell and the electrical output of the

second fuel cell in series to decrease electrical output efficiency of the first fuel cell and the second fuel cell.

8. A method comprising:

supplying an excess amount of fuel to a multiple fuel cell system;

switching at least some of the fuel cells from a parallel electrical arrangement to a series electrical arrangement; and

producing heat from at least some of the excess amount of fuel.

9. The method of claim 8, wherein the fuel comprises hydrogen.

10. The method of claim 8, wherein the multiple fuel cell system comprises solid oxide fuel cells.

11. The method of claim 8, wherein the switching does not change power provided to a load.

12. The method of claim 8, further comprising measuring temperature of one or more fuel cells in the multiple fuel cell system.

13. The method of claim 12, wherein the switching occurs in response to the measuring.

14. The method of claim 8, wherein the switching occurs in response to measuring a fuel cell temperature at or below a set temperature.

15. The method of claim 8, further comprising switching at least some of the fuel cells from a series electrical arrangement to a parallel electrical arrangement.

16. A method comprising:

supplying a substantially constant amount of fuel to a multiple fuel cell system;

switching at least some of the fuel cells from a series electrical arrangement to a parallel electrical arrangement;

increasing EMF efficiency; and

reducing fuel efficiency.

17. The method of claim 16, wherein the fuel comprises hydrogen.

18. The method of claim 16, wherein the multiple fuel cell system comprises solid oxide fuel cells.

19. The method of claim 16, wherein the switching does not change power provided to a load.

20. The method of claim 16, further comprising measuring temperature of one or more fuel cells in the multiple fuel cell system.

21. The method of claim 20, wherein the switching occurs in response to the measuring.

22. The method of claim 16, wherein the switching occurs in response to measuring a fuel cell temperature at or above a set temperature.

23. The method of claim 16, further comprising switching at least some of the fuel cells from a parallel electrical arrangement to a series electrical arrangement.

24. A fuel cell system comprising:

means for supplying an excess amount of fuel to a multiple fuel cell system;

means for switching at least some of the fuel cells from a parallel electrical arrangement to a series electrical arrangement; and

means for producing heat from at least some of the excess amount of fuel.

25. A fuel cell system comprising:

means for supplying a substantially constant amount of fuel to a multiple fuel cell system;

means for switching at least some of the fuel cells from a series electrical arrangement to a parallel electrical arrangement;

means for increasing EMF efficiency; and

means for reducing fuel efficiency.

26. One or more computer-readable media having instructions capable of instructing a processor-based controller to supply an excess amount of fuel to a multiple fuel cell system and to switch at least some of the fuel cells from a parallel electrical arrangement to a series electrical arrangement and thereby cause the fuel cells to produce heat from at least some of the excess amount of fuel.

27. One or more computer-readable media having instructions capable of instructing a processor-based controller to supply a substantially constant amount of fuel to a multiple fuel cell system and to switch at least some of the fuel cells from a series electrical arrangement to a parallel electrical arrangement and thereby cause an increase in EMF efficiency and a reduction in fuel efficiency.